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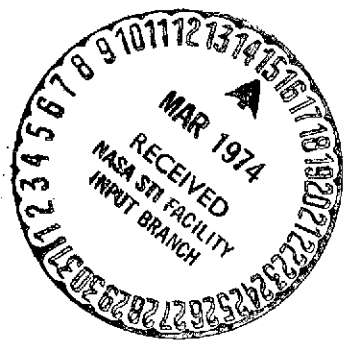

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16. Abstract

Pigs subject to experimental restraint by forced immobilization for 24 hours showed in all cases phenomena of sanguine stasis in the gastric mucous membranes and, with 80% of the subjects, ulcers of the fundus mucous. The pancreas of these animals showed lesions of ischemic necrosis which was rather intense and the medullo-suprarenal was in a state of degranulation. The suprarenal and vascular modifications appear to be concomitant and not consecutive and probably have as their origin a central nervous disturbance.

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LESIONS OF THE DIGESTIVE SYSTEM DETERMINED BY FORCED IMMOBILIZATION IN PIGS

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Twenty-nine pigs weighing from 20 to 35 kg were subjected to a forced /675* immobilization for 24 hours in corsets which allowed the extremities of the members to remain free but without touching the ground. For the period of this action, each young pig received 400 to 600 ml of Tyrode solution to make up for the hydrochlorinated losses. The survivors were sacrificed by bleeding following anesthesia with a "choralose-urethane" mixture.

Under these experimental conditions it was possible to produce gastric lesions of variable seriousness with all animals and ulcers of the fundus mucous type with 32 subjects (80%).

The losses of substance produced in this way by the experimental "restraint" were only encountered in the mucous of the fundus most often at the apex or base of the folds. They may be punctiform, linear or stratiform. These various lesions, with a depth not exceeding 2-3 cm, are limited by a slightly projecting bulge with irregular edges, festooned, and their bottom is covered with a chocolate brown mucous layer formed by a mixture of cankered cells and blood in the process of lysis.

From the histopathological examination, it becomes clear that there is in every case a considerable degree of sanguine stasis which occasionally produces a true hemorrhagic infarction. The latter is, however, always localized with the mucous of the area in the process of necrosis. In the immediate vicinity of these ulcers, the intramucous vertical capillaries which leave from the vessels of the sub-mucous area in the direction of the gastric region are in a state of intense stasis showing up as the "capillary wells" described by Bonfils et al. [1-3] in the experimental gastric ulcer in rats. The loss of substance

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itself is owing to a coagulation necrosis of the cells of the neck of the fundus glands and some stages of bordering cells. There is no inflammatory reaction.

The intestine of the animals subjected to the restraint often shows no modification although there may be some passive congestion without any signs of inflammation. The content of the small intestine has a high concentration of gas, foam and a yellowish liquid.

The liquid often does not appear to have been modified, whereas other times it has a spotted appearance caused by the juxtaposition of whitish clear patches and areas with a normal dark red tint. The histological analysis shows that this appearance comes from a depletion of the PAS (+) material of the hepatic /676 cells, simultaneously caused by the fast to which the animals were subjected as well as by the adrenalin discharge triggered by the stress of the restraint.

The suprarenal glands showed in no way any modifications which could be detected by a macroscopic examination and their weight, monitored over several series of animals, does not contribute any significant information since it is well known that it varies considerably in healthy individuals [4-10].

The cytological modifications of the cortico-suprarenal body are quite varied according to the subjects of a same experimental lot and without correlation with the intensity of the lesions of the stomach. This observation confirms those of a number of authors [4, 5, 6, 11-18] according to whom, outside of extreme cases, it is difficult to find cytological proofs of the adaptation syndrome in pigs. Cellular modifications considered as significant of the reactional state of the cortico-suprarenal body (disappearance of lipidic enclaves from the fasciculus, pyknotic cells) are indeed encountered commonly in perfectly healthy slaughterhouse pigs.

The medullo-suprarenal reactions do, on the other hand, appear to be clearer. In the case of most animals having ulcers, the chromaffin cells are "worn out" and have lost almost all of their specific granulations. They take on, in this way, the appearance of "plant cells" with a normal nucleus or subject to pyknosis.

The pancreas likewise shows lesions in proportion to the intensity of the aggression. When the pigs have ulcers, but still have survived the 24 hour restraint trial, the pancreas shows phenomena of necrobiosis confirmed to small groups of acinous cells or Langerhan's islands. When the animal has succumbed during the trial, the microscopic preparations of pancreatic tissue show intense phenomena of coagulation necrosis of the exocrinal acini and endocrinal formations as well as a considerable ischemia of the glandular parenchyma.

The prolonged experimental restraint therefore appears to be capable of producing in pigs, as in rats, ulcers of the fundic region of the gastric /677 mucous membrane. From the histological viewpoint, these losses of substance have the same characteristics, i.e., degree of circulatory disturbance, absence or weakness of inflammatory reaction.

This observation, as well as the one concerning medullo-suprarenal reactions, are in favor of a primitive nervous attack in the genesis of vascular disorders and consecutive phenomena of necrosis with the stomach and pancreas. Experiments in preventing these accidents by administration of neuroleptics to animals subjected to forced concentration have already provided us with very interesting results which reinforce this working hypothesis.

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